

TWO NEW ENDEMIC SPECIES OF *CALATHEA* (MARANTACEAE)
FROM PANAMA

Helen Kennedy

UCR Herbarium, Department of Botany and Plant Science
University of California Riverside
Riverside, California 92521, U.S.A.
ganders@interchange.ubc.ca

ABSTRACT

Calathea lanibracteata H. Kenn. and *Calathea confusa* H. Kenn., both endemic to Panama, are described as new. They share a similar habit, inflorescence and bract morphology with the closely related *C. allenii* Woodson as well as the absence of both secondary bracts and bracteoles. *Calathea lanibracteata* is distinguished from *C. allenii* and *C. confusa* by the narrowly ovate-elliptic vs. ovate leaf blade (leaf length to width ratio 5.42–7.17:1 vs. 1.57–2.83:1) and villous (hairs 3–4 mm) vs. glabrous or minutely tomentose petioles. *Calathea confusa* is most similar in appearance and most closely related to *C. allenii*. *Calathea confusa* differs by the more numerous minor veins between major lateral veins (7 vs. 1–3), greater distance between major veins ([6–]8–14 vs. 2.5–4.5 mm) and more widely spaced cross-veinlets (27 to 34 vs. 42 to 47 per 5 mm).

RESUMEN

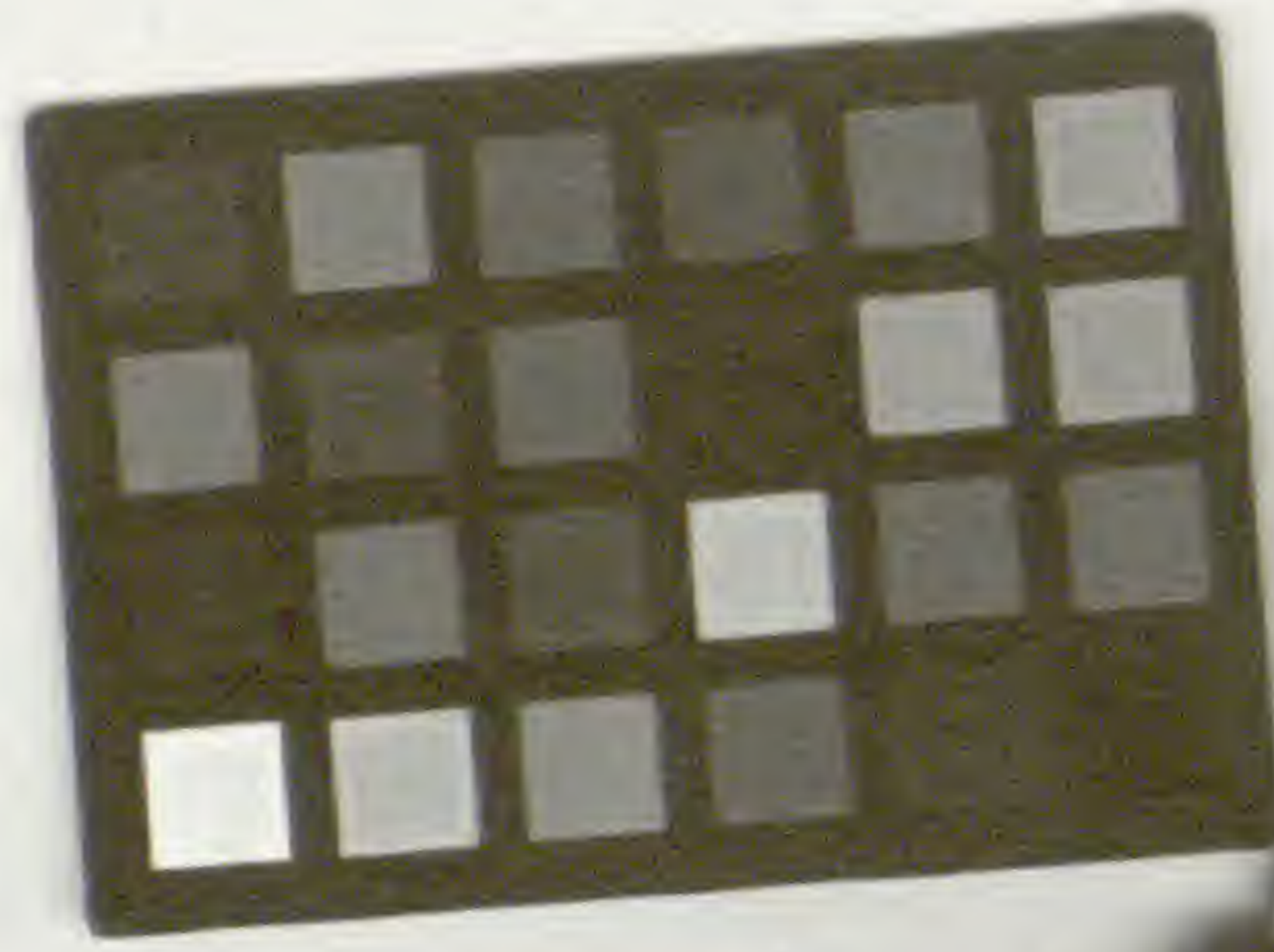
Calathea lanibracteata H. Kenn. y *Calathea confusa* H. Kenn., ambas endémicas de Panamá, son descritas como nuevas. Con la estrechamente relacionada *C. allenii* Woodson comparten hábito similar, inflorescencias y morfología de las brácteas, así como la ausencia de brácteas secundarias y bractéolas. *Calathea lanibracteata* se distingue de *C. allenii* y *C. confusa* por sus hojas con la lámina foliar angostamente ovado-elíptica vs. ovada (la relación largo por ancho 5.42–7.17:1 vs. 1.57–2.83:1) y con el pecíolo viloso (pelos 3–4 mm) vs. glabro o diminutamente tomentoso. *Calathea confusa* es más parecida y estrechamente relacionada con *C. allenii*. *Calathea confusa* difiere de esta última por tener más venas menores entre las mayores laterales (7 vs. 1–3), mayor distancia entre venas mayores ([6–]8–14 vs. 2.5–4.5 mm) y venas teseladas más distanciadas (27 a 34 vs. 42 a 47 por 5 mm).

TAXONOMIC TREATMENT

Calathea lanibracteata H. Kenn., sp. nov. (**Fig. 1**). TYPE: PANAMÁ. BOCAS DEL TORO: along old pipeline road from continental divide, forest, 900 m, 08°48'04"N, 82°15'04"W, 27 Dec 1986, G. McPherson & J. Aranda 10170 (HOLOTYPE: MO; ISOTYPE: PMA).

Haec species a *Calathea allenii* Woodson lamina foliari angustiore (7.4–10 vs. 12–18 cm lata) ambitu anguste ovato-elliptica vs. ovata (longitudinis cum latitudine ratione 5.42–7.17 vs. 1.57–2.83) apice acuminato-attenuata (vs. obtusa cum acumine) atque bracteis villosis (vs. glabris pilosisve) distinguitur.

Plants rhizomatous, caulescent, herbs, ca 1.5 m high; stem villous, hairs pale straw-colored, 2–3 mm. **Leaves** 3–4 (or more) basal with a single cauline leaf borne above an elongate stem internode, ca. 1.25 m; leaf sheath auriculate, reddish, villous, sheath of subtending leaf 11–12 cm, others at least 50 cm; petiole reddish (fide Hammel et al. 14721), villous, hairs 3–4 mm, 3.8–8.5 cm in subtending leaf, 32–44 cm in others; pulvinus elliptic in cross-section, tomentose adaxially, the rest glabrous but tomentose throughout just above junction to petiole, 3.9–4.5 cm; leaf blade stiff, chartaceous, narrowly ovate-elliptic, apex acuminate attenuate, base acute to 90°; 44–52 × 7.4–9.5 cm in subtending leaf, 55–71 × 8.5–10 cm in others, (length:width ratios 5.42–7.17:1) lateral veins 25 to 31 per 3 cm (measured at mid-point of each side of blade), cross-veinlets 36 to 40 per 5 mm, adaxial surface green, glabrous, midrib glabrous, abaxial surface light green, tomentose, hairs pale straw-colored, most dense along veins, more sparse on acumen, up to 0.5 mm, midrib tomentose along sides in basal 1/5, tomentose throughout apically. **Inflorescence** terminal, 1 per shoot, imbricate, fusiform, 8.3–14 × 3–3.7 cm; peduncle reddish, villous, 1.2–10.3 cm. **Bracts** 17–28, spirally arranged, central portion stiff, hardened, margins and apex soft herbaceous, elliptic, apical 7–10 mm of bract surface concave, forming a shallow channel centrally, apex truncate to rounded, apex slightly spreading, margin in apical half undulate, undulations ca. 8–10 per cm, 4.5–5.8 × (1.3–)1.8–3 cm, each bract subtending up to 3 or more flower pairs, abaxial surface of bracts reddish, villous throughout or with hairs sparser centrally and basally, adaxial surface villous at apical



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Holotype of: *Calathea lanibracteata*
H. Kenn.
Ref.
Missouri Botanical Garden (MO)

Sheet 1 of 2

TYPE SPECIMEN
Missouri Botanical Garden (MO)

PANAMA

Marantaceae
Calathea (sp. nov.) *lanibracteata* H. Kenn.
in det.

Province of Bocas del Toro: Along old
pipeline road from continental divide.
Forest.

08°48'04"N 82°15'04"W 900 m
Herb 1.5 m; corolla yellow and red.

27 December 1986
Gordon McPherson and J. Aranda 10170
MISSOURI BOTANICAL GARDEN HERBARIUM (MO)

FIG. 1. *Calathea lanibracteata* H. Kenn. Holotype. Photo provided by Missouri Botanical Garden (McPherson & Aranda 10170, MO).

margin, subglabrous to glabrous in basal third; bicarinate prophyll membranaceous, ovate, apex acute, few sparse hairs to 1.5 mm on sides near junction with carina, the rest glabrous, 2–2.3 × ca. 1.1 cm, 0.5–0.8 cm wide, carina to carina; secondary bracts and bracteoles absent. **Flowers** open spontaneously, yellow throughout (Hammel *et al.* 14721) or yellow and red (McPherson & Aranda 10170). **Sepals** membranous, narrowly linear-elliptic, apex obtuse, margins inrolled appearing acute, glabrous, 18–20 × ca. 4 mm. **Corolla** tube with few sparse hairs 1.5 to 2 mm in apical half, less sparse toward lobes, 29–34 mm long; corolla lobes subequal, elliptic, obtuse, with scattered pilose hairs, hairs 0.1 to 0.25 mm, 16–18 × 4–5 mm. **Staminodes** 3; outer staminode obovate, emarginate, 10–12 × 9–10 mm; callose staminode totally callose, apex obtuse with minute acumen, ca. 15 mm; cucullate staminode ca. 6 mm; stamen with lateral petaloid appendage to 1 mm wide, extending to basal quarter of the anther; anther 3 mm; ovary sericeous apically, hairs straw-colored, 1.5–3 mm, glabrous basally. **Capsule** unknown.

Additional specimens examined: **PANAMÁ. Bocas del Toro:** Hill just S of Chiriquí Grande, at end of pipeline access road 2 mi N of 2nd large bridge N (10 mi) of continental divide, in forest along ridge, 350–500 m, 08°54'N, 82°10'W, 10 Mar 1986, B. Hammel, G. McPherson & L. Sanders 14721 (MO).

Distribution and habitat.—*Calathea lanibracteata* is endemic to Panama, known only from two localities in Prov. Bocas del Toro, both from along the pipeline access road, from 350–900 m in wet or montane wet forest habitats.

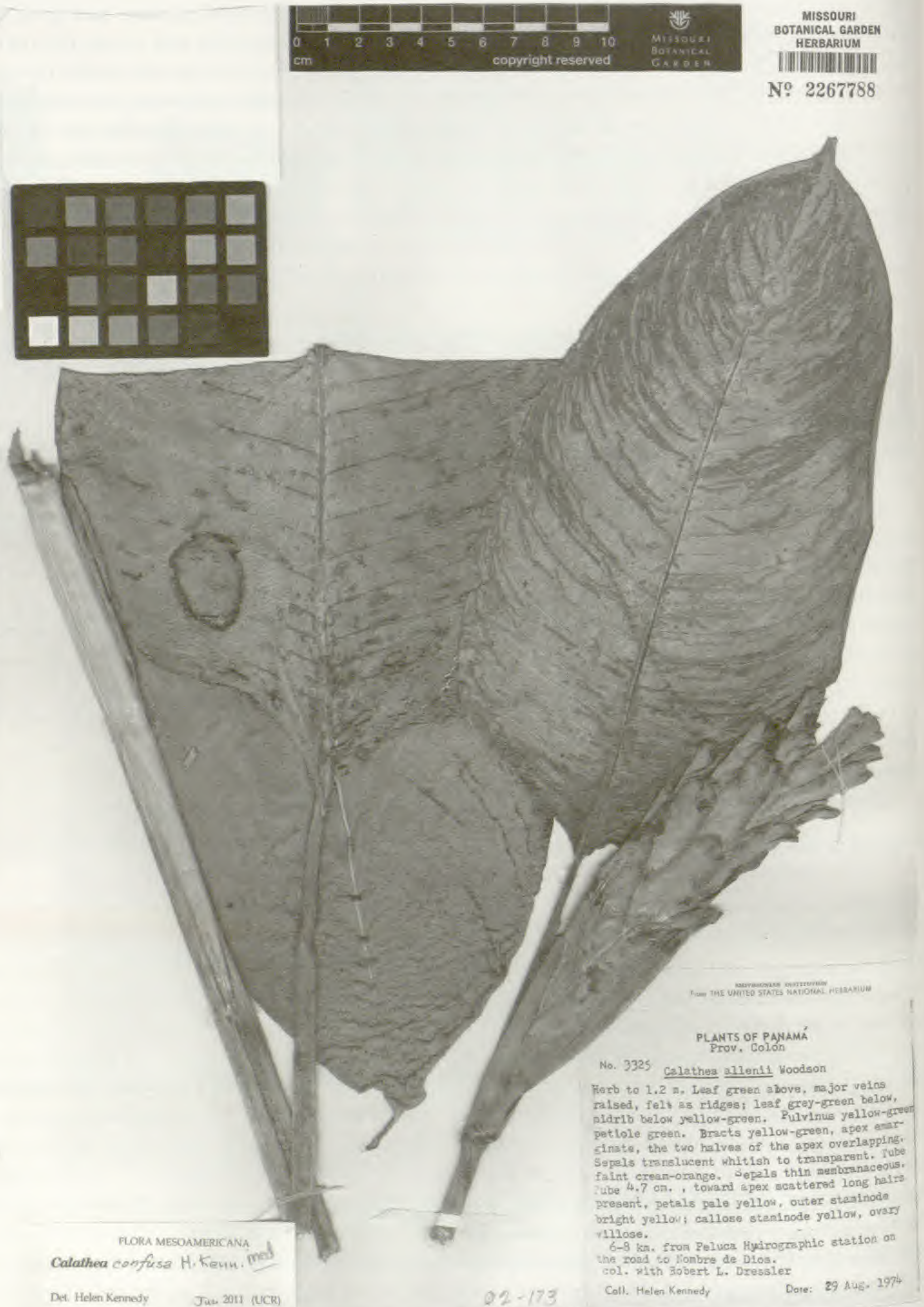
Discussion.—*Calathea lanibracteata* belongs to the informally treated “*Calathea lanicaulis* Group” as outlined in Flora of Ecuador (Kennedy 1988:47). These species are perennials characterized by their habit of several basal leaves with a single cauline leaf, subtending the inflorescence(-s) of spirally arranged bracts, borne above an elongate stem internode. *Calathea lanibracteata* is most closely related to *C. allenii* Woodson and *C. confusa*, sharing a similar habit, similar inflorescence and bract morphology, and the absence of both secondary bracts and bracteoles. *Calathea lanibracteata* differs from *C. allenii* and *C. confusa* by the narrowly ovate-elliptic vs. ovate leaf blade (leaf length to width ratio 5.42–7.17:1 vs. 1.57–2.83:1), narrower leaf blades (7.4–10 vs. 12–18 cm wide), apex acuminate attenuate vs. obtuse with acumen, base acute to 90° vs. obtuse, the villous (hairs 3–4 mm) rather than glabrous or minutely tomentose petioles, and the villous rather than glabrous to pilose bracts.

Etymology.—The specific epithet, *lanibracteata*, is in reference to the distinctly hairy bracts.

Calathea confusa H. Kenn., sp. nov. (**Fig. 2**). TYPE: PANAMÁ. COLÓN: 6–8 km from Peluca Hydro-graphic station on the road to Nombre de Dios, 29 Aug 1974, H. Kennedy & R. L. Dressler 3325 (HOLOTYPE: MO; ISOTYPES: F, US).

Haec species a *Calathea allenii* Woodson venis minoribus numerosioribus (ca. 7 vs. 1 ad 3) inter venas laterales inter se distantioribus ([6–] 8–14 vs. 2.5–4.5 mm) atque venis tessellatis laxioribus (27 ad 34 vs. 42 ad 47 per 5 mm) distinguitur.

Plants rhizomatous, caulescent herbs, 1–1.3 m. **Leaves** 3–5 basal with a single cauline leaf borne above an elongate stem internode, 30–55 cm; leaf sheath green, appressed tomentose at apex and along margin, the rest glabrous except very base sericeous, 8–15.5 cm in subtending leaf, 18–26 cm in basal leaves; petiole green, glabrous but occasionally minutely appressed tomentose, absent in subtending leaf, 16–41 cm in basal leaves; pulvinus yellow-green, sparsely tomentose adaxially with the rest glabrous to minutely tomentose throughout, 1.8–3 cm in subtending leaf, 3.3–4.7 in basal leaves; leaf blade coriaceous, major veins raised, felt as ridges, ovate, apex obtuse with acumen to slightly acuminate, acumen 1.5–3 cm, usually curved to the left, base obtuse, shortly attenuate, 22–32 × 12–16 cm in subtending leaf, 40–49 × 16–18 cm in basal leaves, (length:width ratios 1.57–2.83:1) lateral veins 20 to 27 (to 29) per 3 cm (measured at midpoint of each side of blade), (6–) 8–14 mm between major veins and commonly 7 minor veins between the major veins, cross-veinlets 27 to 34 per 5 mm, adaxial surface green, tomentose along major veins and throughout near right (inner coiled portion of blade) margin and acumen to nearly glabrous with sparse hairs along major veins only at base and on acumen, midrib tomentose to glabrous, abaxial surface grey-green, tomentose throughout to glabrous except sparsely tomentose near margin, midrib yellow-green, glabrous to densely tomentose, hairs 0.8–2 mm. **Inflorescence** terminal, 1 per shoot, imbricate, fusiform, 12–17.5 × 3.5–5.1 cm in flower, to 11 cm wide in fruit; peduncle



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FROM THE UNITED STATES NATIONAL HERBARIUM

PLANTS OF PANAMA
Prov. Colon

No. 3325 *Calathea allenii* Woodson

Herb to 1.2 m. Leaf green above, major veins raised, felt as ridges; leaf grey-green below, midrib below yellow-green. Pulvinus yellow-green, petiole green. Bracts yellow-green, apex emarginate, the two halves of the apex overlapping. Sepals translucent whitish to transparent. Tube faint cream-orange. Sepals thin membranaceous. Tube 4.7 cm., toward apex scattered long hairs present, petals pale yellow, outer staminode bright yellow; callose staminode yellow, ovary villose.

6-8 km. from Peluca Hydrographic station on the road to Nombre de Dios.
col. with Robert L. Dressler

Coll. Helen Kennedy

Date: 29 Aug. 1974

FLORA MESOAMERICANA
Calathea confusa H. Kenn. med

Det. Helen Kennedy

Jul. 2011 (UCR)

02-173

FIG. 2. *Calathea confusa* H. Kenn. Holotype. Photo provided by Missouri Botanical Garden (Kennedy & Dressler 3325, MO).

green, 1–2.3 cm. **Bracts** 18–30, spirally arranged, central portion firm, margins and apex thinner, herbaceous, elliptic, apex emarginate, the two lobes of the apex overlapping, margin undulate apically, 6–8.5 × 2–3.4 cm, abaxial surface of bracts yellow-green, glabrous centrally, right margin appressed pilose, left margin only sparsely pilose, adaxial surface densely appressed pilose apically, just below the lobes, lobes sparsely pilose with shorter hairs apically; bicarinate prophyll membranaceous, ovate-triangular, apex acute, glabrous, 2.7–3.3 × 0.9–1.1 cm, ca. 0.5 cm wide, carina to carina; secondary bracts and bracteoles absent. **Flowers** open spontaneously; pedicel of flower pair sericeous, hairs 2 mm. **Sepals** membranous, narrowly elliptic to sublinear, apex acute, translucent whitish to transparent, glabrous, 30–36 × 3–4 mm. **Corolla** tube faint cream-orange, pilose, hairs to 1.5 mm, 38–40 mm; corolla lobes subequal, elliptic, acute to 90°, pale yellow, pilose, more densely so than on tube, 14–15 × 3–4 mm. **Staminodes** 3; outer staminode bright yellow, ca. 11 mm; callose staminode yellow, ca. 13 mm; cucullate staminode 8–9 mm; anther ca. 3 mm. Ovary villous, 4–4.5 × 1.5–2 mm. **Capsule** unknown; seed black, aril white (fide Nee 7270).

Additional specimens examined: **PANAMÁ. Colón:** Río Guanche, above the bridge on Portobelo Road, ca. 3–5 km above bridge, 50–200 m, 8 Jul 1976, T. B. Croat 36967 (MO); Río Guanche, ca. 1.5 mi up-stream from the bridge, lowland wet forest, c. 10 m, 23 Aug 1972, H. Kennedy 1495 (F); Teck Cominco Petaquilla mining concession, in plot C001, slope in forest, 87 m, 08°52'09"N, 80°42'48"W, 16 Sep 2007, G. McPherson 19612 (MO); along Río Guanche, 6 km S of Portobelo, 2 km upstream from the bridge, dense growth of secondary tropical wet forest 5 m tall, 0–10 m, 6 Oct 1973, M. Nee 7270 (MO). **San Blas:** El Llano-Cartí Road, 16.5 km from Panamerican Highway, border of Panama, montane forest along forest stream, medium light, 13 Apr 1977, J.P. Folsom 2602 (MO). **Bocas del Toro:** Hill just S of Chiriquí Grande, at end of pipeline access road 2 mi N of 2nd large bridge N (10 mi) of continental divide, in forest along ridge and draws, 350–500 m, 08°54'N, 82°10'W, 10 Mar 1986, B. Hammel et al. 14726 (MO).

Distribution and habitat.—*Calathea confusa* is endemic to Panama. It occurs along the Atlantic slope in Comarca San Blas (now Comarca Cuna Yala) west to Prov. Bocas del Toro from sea-level to near 500 m in moist to wet forest habitats. It is generally found in the shaded understory of the forest.

Discussion.—*Calathea confusa* also belongs to the informally treated “*Calathea lanicaulis* Group” as outlined in Flora of Ecuador (Kennedy 1988: 47). *Calathea confusa* is most closely related to *C. allenii* Woodson sharing a similar habit, inflorescence and bract morphology, and also the absence of the secondary bracts and bracteoles. These two sister species are so similar in general aspect, that *C. confusa* has been consistently mistaken for *C. allenii* by myself and others since the 1970's. When comparing a stack of *C. allenii* specimens with *C. lanibracteata* for differences, the difference of venation among the supposed *C. allenii* material became apparent. *Calathea confusa* differs from *C. allenii* in the more numerous minor veins between the major, raised, lateral veins (7 vs. 1 to 3), the greater distance between major veins ([6–] 8–14 vs. 2.5–4.5 mm) and the more widely spaced cross-veinlets (27 to 34 vs. 42 to 47 per 5 mm). The two tend to separate out ecologically as well. *Calathea confusa* occurs from sea-level to nearly 500 m in moist or wet forest habitats while *C. allenii* is found from 500–1000 (–1200) m in montane or cloud forest habitats.

Etymology.—The specific epithet, *confusa*, is in reference to its being confused with *C. allenii* and also the unusual (somewhat confusing) variability of leaf pubescence between populations.

ACKNOWLEDGMENTS

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